(Canceled) 1. An optical switch disposed at an intersection of two waveguides comprising:

> a trench defined by two sidewalls and a trench floor surface extending across said intersection of said two waveguides;
>
> a first electrode disposed near one of said two sidewalls and a second electrode disposed near said trench floor surface of said trench;
>
> an electrolytic solution filled in said trench wherein said electrolytic solution containing cations of an electro-depositing mirror metal for responding to an electrical field applied to said first and second electrodes to form an optical reflective surface on one of said sidewalls for reflecting an optical signal from one of said two waveguides to another one of said two waveguides.

(Currently Amended) 2. An ~~The~~ optical switch ~~of claim 1 wherein~~ disposed at an intersection of two waveguides comprising:

> a trench defined by two sidewalls and a trench floor surface extending across said intersection of said two waveguides;
>
> a first electrode disposed near one of said two sidewalls and a second electrode disposed near said trench floor surface of said trench;
>
> an electrolytic solution filled in said trench wherein said electrolytic solution containing cations of an electro-depositing mirror metal for responding to an electrical field applied to said first and second electrodes to form an optical reflective surface on one of said sidewalls for reflecting an optical signal from one of said two waveguides to another one of said two waveguides; and
>
> said electrolytic solution further includes at least one halide and/or pseudohalide compound having cations that are not electroactive in a voltage range applied to said electrodes.

(Previously Presented) 3. The optical switch of claim 2 wherein:

a ratio of a total molar concentration of said halide and/or pseudohalide anions representing an total aggregate of anions originating from said halide and/or pseudohalide compound and anions originating from said source of said cations of said electro-depositing mirror material, to a total molar concentration of said cations of said electro-depositing mirror material being greater than a ratio of six to one.

(Currently Amended) 4. The optical switch of claim ~~1~~ 2 further comprising:

an electromagnetic means for applying said electric field to said electrodes for actuating said optical switch.

(Currently Amended ) 5. The optical switch of claim 4 wherein:

said electromagnetic means is provided for applying a negative electric field to ~~one~~ said first electrode~~s~~ near one of said sidewalls for actuating said optical switch.

(Currently Amended) 6. The optical switch of claim 4 wherein:

said electromagnetic means is provided for applying a negative electric field to ~~one~~ said second electrode~~s~~ near said trench floor surface for deactivating said optical switch.

(Currently Amended) 7. The optical switch of claim ~~1~~ 2 further comprising:

an antireflective layer formed on said sidewalls.

(Currently Amended) 8. The optical switch of claim 5 wherein:

said electromagnetic means is further provided for applying a positive electric field to ~~one~~ said second electrode~~s~~ near said trench floor surface for enhancing an operation of actuating said optical switch.

(Currently Amended) 9. The optical switch of claim 6 wherein:

said electromagnetic means is further provided for applying a positive electric field to ~~one~~ said first electrodes near one of said sidewalls for enhancing an operation of deactivating said optical switch.

(Currently Amended) 10. The optical switch of claim ~~1~~ 2 wherein:

said electrodes are optical transmissive electrodes.

(Currently Amended) 11. The optical switch of claim ~~1~~ 2 wherein:

said optical switch and said waveguides are supported on a substrate.

(Canceled) 12. An optical device disposed in a trench defined by optical transmissive trench sidewalls comprising:

a medium filling the trench with an electro-magnetically controllable medium property for controlling an optical transmission through said trench and said trench sidewalls.

(Canceled) 13. The optical device of claim 12 wherein:

said medium property includes an electro-magnetically controllable ion-deposition on said trench sidewalls for controlling a reflective/transmissive optical path through said trench sidewalls.

(Canceled) 14. The optical device of claim 12 further comprising:

an electromagnetic means for applying an electromagnetic field on said medium for controlling said medium property for controlling said optical path.

(Canceled) 15. The optical device of claim 12 further comprising:

an electrode disposed near said trench sidewalls for applying an electromagnetic field on said medium for controlling said medium property.

(Canceled) 16. The optical device of claim 13 further comprising:

an electrode disposed near said trench sidewalls for applying an electromagnetic field on said medium for controlling said electro-magnetically controllable ion-deposition on said trench sidewalls for controlling a reflective/transmissive optical path through said trench sidewalls.

(Canceled) 17. The optical device of claim 16 further comprising:

a second electrode disposed near a trench floor surface of said trench for applying a second electromagnetic field on said medium for controlling said electro-magnetically controllable ion-deposition on said trench floor surface.

(Canceled) 18. The optical device of claim 12 wherein:

said medium comprising an electrolytic solution filled in said trench wherein said electrolytic solution containing cations of an electro-depositing mirror metal for responding to an electrical field applied to said medium.

(Currently Amended) 19. An ~~The~~ optical device ~~of claim 18 wherein~~ <u>disposed in a trench defined by optical transmissive trench sidewalls comprising</u>:

<u>a medium filling the trench with an electro-magnetically controllable medium property for controlling an optical transmission through said trench and said trench sidewalls;</u>

<u>said medium comprising an electrolytic solution filled in said trench wherein said electrolytic solution containing cations of an electro-depositing mirror metal for responding to an electrical field applied to said medium; and</u>

said electrolytic solution further includes at least one halide and/or pseudohalide compound having cations that are not electroactive in a voltage range applied to said electrodes.

(Currently Amended) 20. The optical device of claim ~~18~~ <u>19</u> wherein:

a ratio of a total molar concentration of said halide and/or pseudohalide anions representing an total aggregate of anions originating from said halide and/or pseudohalide compound and anions originating from said source of said cations of said electro-depositing mirror material, to a total molar concentration of said cations of said electro-depositing mirror material being greater than a ratio of six to one.

(Currently Amended) 21. The optical device of claim ~~13~~ <u>19</u> wherein:

said electromagnetic means is provided for applying a negative electric field to one said electrodes near one of said sidewalls for actuating said optical device.

(Currently Amended) 22. The optical device of claim ~~17~~ <u>19</u> wherein:

said electromagnetic means is provided for applying a negative electric field to one said electrodes near said trench floor surface for deactivating said optical device.

(Currently Amended) 23. The optical device of claim ~~12~~ 19 further comprising:

an antireflective layer formed on said sidewalls.

(Currently Amended) 24. The optical device of claim ~~16~~ 19 wherein:

said electrodes are optical transmissive electrodes.

(Currently Amended) 25. The optical device of claim ~~12~~ 19 further comprising:

a substrate for supporting said optical device.

(Canceled) 26. A method for forming an optical device in a trench defined by optical transmissive trench sidewalls comprising:

filling said trench with a medium having an electro-magnetically controllable medium property for controlling an optical transmission through said trench and said trench sidewalls.

(Canceled) 27. The method of claim 26 wherein:

said step of filling said trench with said medium is a step of filling said trench with a medium having a property of electro-magnetically controllable ion-deposition on said trench sidewalls for controlling a reflective/transmissive optical path through said trench sidewalls.

(Canceled) 28. The method of claim 26 further comprising:

applying an electromagnetic field on said medium for controlling said medium property for controlling said optical path.

(Canceled) 29. The method of claim 26 further comprising:

disposing an electrode near said trench sidewalls for applying an electromagnetic field on said medium for controlling said medium property.

(Canceled) 30. The method of claim 27 further comprising:

disposing an electrode near said trench sidewalls for applying an electromagnetic field on said medium for controlling said electro-magnetically controllable ion-deposition on said trench sidewalls for controlling a reflective/transmissive optical path through said trench sidewalls.

(Canceled) 31. The method of claim 30 further comprising:

disposing a second electrode near a trench floor surface of said trench for applying a second electromagnetic field on said medium for controlling said electro-magnetically controllable ion-deposition on said trench floor surface.

(Canceled) 32. The method of claim 26 wherein:

said step of filling said trench with said medium is a step of filling said trench with a said comprising an electrolytic solution containing cations of an electro-depositing mirror metal for responding to an electrical field applied to said medium.